



The Effect of Beta-Carotene Supplementation on Serum Vitamin D Metabolite Concentrations

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Journal: Cancer Epidemiology, Biomarkers & Prevention 8; 1115 - 1116

Abstract: In the alpha-Tocopherol, beta-Carotene Cancer Prevention (ATBC) study, a large randomized placebo-controlled trial designed to test the cancer prevention effects of alpha-tocopherol (50 mg/day) and beta-carotene (20 mg/day), participants receiving supplemental beta-carotene had significantly higher rates of lung cancer than those not receiving beta-carotene. It has been hypothesized that the supplemental beta-carotene may have interfered with the synthesis of vitamin D and that the resulting lower concentrations of vitamin D contributed to the elevated cancer incidence. We evaluated whether supplementation with beta-carotene altered the serum concentrations of either 25-hydroxyvitamin D or 1,25-dihydroxyvitamin D in the ATBC Study, by comparing on-Study changes between baseline and follow-up serum samples among 20 randomly selected matched pairs of subjects from the beta-carotene and placebo groups. In a matched-pair analysis, the difference between the changes in both 25-hydroxyvitamin D and 1,25-dihydroxyvitamin D in the beta-carotene supplement and placebo groups were small and statistically nonsignificant. These results provide no evidence that beta-carotene supplementation interferes with the endogenous production of 25-hydroxyvitamin D or 1,25-dihydroxyvitamin D and suggest that it is unlikely that an interaction between supplemental beta-carotene and vitamin D metabolites contributed to the modest increase in lung cancer incidence observed in the ATBC Study.